UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
ONE CONGRESS STREET SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

June 19, 2006

Mr. David E. Montany
Project Coordinator
Pratt & Whitney
400 Main Street M/S 105-11
East Hartford, CT 06108

Re: Approval of the Supplemental Remedial Investigation Report
Old Southington Landfill Superfund Site

Dear Mr. Montany:

The U.S. Environmental Protection Agency (EPA) and the CT Department Environmental Protection (CT DEP) have reviewed the Supplemental Remedial Investigation Report for the Old Southington Landfill Superfund Site, revised dated, May 5, 2006, and submitted by Kleinfelder for the Performing Settling Defendants (PSDs).

EPA is in general agreement with the PSD's findings and conclusions. There are however some areas that need clarification and other areas where the Agencies do not agree entirely with the PSDs' assessments and or conclusions. Thus EPA has added to the report, an EPA Addendum and CT DEP Memorandum.

EPA agrees that sufficient data has been collected to characterize the nature and extend of contamination at the site in order to be able to select a final remedy with respect to groundwater impacts. Therefore EPA hereby approves the Supplemental Remedial Investigation Report with Agency comments, pursuant to the Consent Decree in the matter of United States and State of Connecticut v. Town of Southington, et al, Docket Nos. 3:98cv8 (GLG) and 3:98cv236 (AHN), Section XI , Paragraph 40.

If you should have any questions or comments please do not hesitate to call me at (617)918-1246. Thank you for your continued cooperation.

Sincerely,

Almerinda P. Silva
Remedial Project Manager

cc: Gary Wilson, Kleinfelder
David Platt, Murtha Law
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US EPA ADDENDUM
to the
SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT
Revised: JUNE 2006

June 19, 2006

This technical addendum further discusses certain aspects of the conceptual model for groundwater plume behavior at the Old Southington Landfill Site (the Site) as presented in the Supplemental Remedial Investigation Report (SRI) prepared by the Performing Settling Defendants (PSDs). This addendum focuses on those SRI technical conclusions that EPA does not necessarily agree with or believes warrant additional clarification. Certain other technical issues related to the groundwater plume are also addressed.

Finally, specific comments related to certain detailed technical points in the SRI have also been included.

Groundwater Plume Overview

1. Fall 2005 Shallow Groundwater Screening Program – In fall 2005 the PSDs conducted a multi-phase drive point screening investigation to delineate volatile organic compounds (VOCs) in shallow groundwater downgradient of the Site. This important field investigation was conducted to assess potential vapor intrusion issues related to the volatilization of VOCs from shallow groundwater into overlying commercial and/or residential buildings. However, the results of this investigation are not thoroughly discussed in the SRI text. This field effort included extensive shallow groundwater VOC screening analyses immediately downgradient of the southern, central and northern portions of the landfill. The analytical results for this investigation revealed the presence of varying concentrations of chlorinated VOCs in shallow groundwater at numerous locations immediately downgradient of all three (southern, central and northern) portions of the landfill.

   The results of this investigation indicated the presence of VOCs at a significant number of locations immediately downgradient of the landfill, at concentrations in excess of Connecticut DEP Remediation Standard Regulations (RSRs) criteria for residential and/or commercial buildings. These results substantively expand the potential land area immediately downgradient of the landfill where CT RSRs for vapor intrusion may be exceeded for commercial and/or residential criteria.

   As is further discussed below, these results also have significant implications for the conceptual model of the groundwater plume emanating from the landfill. The results of this investigation need to be clearly recognized in considering any overall conceptual model of the groundwater plume at the Site.

2 Groundwater Plume Source Term (SRI Sections 3.3.2 and 4.1.1) – The SRI indicates that the bulk of the groundwater VOC plume at the Southington Site emanates from the waste mass in the southern portion of the landfill. This waste mass exists both above and below the water table. As noted in the SRI, historical information indicates that the southern portion of the landfill received both municipal and industrial waste. The northern portion of the landfill is believed to have primarily received construction debris and related waste, hence the reference

to this portion of the landfill as a "stump dump." However, recent field investigations indicate that some limited deposition of industrial waste may have occurred in the northern portion of the landfill.

In particular, a number of samples collected during the fall 2005 drivepoint sampling study from locations to the north of well G313A and immediately south of the unnamed stream confirm the presence of chlorinated VOCs in shallow groundwater at varying concentrations. These results strongly suggest that some chlorinated solvents were, in fact, deposited in the central and northern portions of the landfill during its period of operation.

It now appears that while the bulk of the downgradient groundwater VOC plume originates in the waste mass of the southern portion of the landfill, there is at least a limited contribution to the plume from more northern portions of the landfill. As such, the overall width of the groundwater VOC plume leaving the landfill appears to be substantively wider than earlier field data indicated and is suggested in some SRI discussions. It should be recognized that the width of the shallow groundwater VOC plume leaving the landfill is important in assessing the potential implications of downgradient plume migration, particularly with respect to vapor intrusion into overlying buildings. It is also important in establishing the overall area of the groundwater aquifer which may be contaminated by at least low levels of chlorinated VOCs.

Based upon the data set compiled in the SRI, it appears that groundwater VOC plume, initially migrates from the landfill as a broad front of numerous discrete "fingers" of varying levels of VOC contamination. This plume front stretches from the southern portion of the landfill into northern portions of the landfill. As the plume moves downgradient across the Chuck and Eddy's property, the plume "fingers" may coalesce into a somewhat more uniform plume whose width may tend to narrow in response to hydrologic factors.

3 Deep Groundwater Flow (SRI Section 3.3.2) – The SRI discussion on groundwater flow downgradient of the landfill emphasizes the importance of a significant bedrock trough in controlling plume migration. It is recognized that this is an important hydrogeologic component. However, the extent of control that this component exerts on the overall direction of groundwater plume flow has not been completely confirmed.

In particular, SRI Plate 5 and the subsequent bedrock interpretation depend on using the refusal depths of the Phase 1A Supplemental Groundwater Investigation (SGI) drive points. In some cases multiple tries were made to penetrate boulder nests and other obstacles. At location M-3 there were four attempts made to install the microwell. The final depth is not necessarily that of bedrock (unproven or disproven), but drives the interpretation of the extremely sinuous northwest trending valley and steeply sloping southern wall and barrier to groundwater flow. Well depths on the entire southwest portion of the plate that represent the up sloping bedrock wall are based on refusals. The Phase 1A Data Report showed a westerly groundwater flow in this area. This has been subsequently modified in the LTMP reports and SRI to a more northwesterly trend through computer generated contouring with limited data along the southern boundary. With no other wells along Buckland Road south of the G318 cluster, it is uncertain as to whether the available data fully justify the conclusions regarding an all encompassing northwest trending groundwater (and plume) flow.

4. VOC Plume Migration into the Moderate/Deep Aquifer (SRI Section 3.3.2) – The SRI correctly discusses the fact that the bulk of the southern portion of the bulk of the groundwater VOC plume moves downward from the shallow aquifer to deeper portions of the

aquifer relatively soon after leaving the landfill and entering the eastern portions of Chuck and Eddy's property. However, it should be recognized that in the northern portion of the Site downward vertical gradients are not as strong and the VOC plume migrates downward more slowly. Therefore, although there is less VOC groundwater contamination migrating out of the central and northern portions of the Site, this contamination has the potential to impact a larger downgradient land area with respect to vapor intrusion into buildings and exceedances of related CTDEP RSR criteria (as exhibited in the fall 2005 shallow groundwater screening program discussed in comment 1).

5. Downgradient Plume Boundaries (SRI Section 3.3.2) – The SRI devotes considerable discussion to the nature and extent of the downgradient VOC plume. It is generally agreed that the plume ultimately discharges into the Quinnipiac River although the exact manner and location of the discharge process has not been completely clarified. By contrast, some uncertainty remains regarding the exact plume boundaries (the plume width), particularly after it leaves the landfill and traverses across Chuck and Eddy's property.

   The southern boundary of the plume in the vicinity of monitoring well GZ14D is of some concern. This well to the south of Chuck and Eddy's property consistently displays moderate chlorinated VOC contamination in the deeper aquifer. In addition, this well is located only a relatively short distance (within a few hundred feet) from the boundary of the CT class GA groundwater aquifer (suitable for drinking water) lying to the southwest of this location. It is uncertain how much farther beyond this well the southern boundary of the groundwater VOC plume exists. Additional monitoring may be required in this area to ensure that the groundwater VOC plume has not migrated into the class GA aquifer area.

   In the northern portion of the Site, some uncertainty remains regarding the exact boundary of the plume in the vicinity of the unnamed stream. The fall 2005 drive point groundwater VOC screening program results clearly demonstrated that elements of the VOC plume have migrated as far north as the stream. In addition, vinyl chloride and dichloroethene were detected at well SDW3 on the north side of the unnamed stream during the September 2005 LTMP sampling round. This raises the question as to whether elements of this component of the plume have migrated beneath the stream onto portions of the former Lori Corp. property.

6. VOC Migration Downgradient of Former SSDA1 (SRI Section 4.1.1) – The SRI devotes considerable discussion to the apparent release of a limited slug of TCE contaminated groundwater in 2000 from the area of the former SSDA1, following the landfill cap construction. The SRI notes that as this "slug" of VOC contaminated groundwater migrated downgradient between 2000 to 2005, VOC concentrations immediately downgradient of the landfill have dropped. While this is a reasonable interpretation of the available data, evidence suggests that a more complex plume migration process is occurring in this north-central portion of the landfill.

   Specifically, in the vicinity of well G302A, VOC concentrations generally decreased between 2002 and 2004, as would be consistent with a pulse of contamination. However, since then VOC concentrations have leveled off and sporadically increased during certain sampling events. In particular, in September 2005, vinyl chloride concentrations increased to 30 ug/L from a June 2005 level of 8 ug/L. Overall, the VOC data suggest that while a pulse of contamination may have been released in 2000 and subsequently moved downgradient, a chronic shallow VOC contamination plume continues to be released from north-central portions of the landfill. Further evidence of this chronic release pattern is in the results of the fall 2005 shallow groundwater screening program (discussed in comment 1). This suggests

that groundwater VOC related vapor intrusion issues remain a concern immediately downgradient of this portion of the landfill for the foreseeable future.

7. VOC Plume Downgradient of the Northwest Corner of the Landfill (SRI Section 4.1.1) – LTMP sampling results have demonstrated the presence of trace levels of VOCs at certain locations on the former Lori Corp. property to the immediate west of the northwest corner of the northern portion of the landfill. The detection of VOCs in wells in this area is sporadic and the connection to the landfill is uncertain. The SRI suggests that some contamination in this area may be residual VOCs related to past operations on the former Lori Corp. property itself. However, given that elements of the landfill VOC plume approach the unnamed stream and may migrate beneath it, the exact source(s) of groundwater VOCs on this property remains uncertain.

8. Metals Transport (SRI Section 5.1.4) – As noted in the SRI discussion, the available LTMP data do not show evidence of a groundwater metals plume emanating from the Southington Site. While various metals are detected in certain wells, the detections tend to be erratic in time and space and not consistent with what would be expected if a plume were migrating out of the landfill.

   As the SRI notes for most metals that are present in the landfill (particularly the more toxic metals), their migration downgradient is likely to be quite slow. It is, however, noted that should future LTMP monitoring efforts identify significant metals concentrations in groundwater leaving the landfill, then site-specific geochemical data should be used to estimate migration times rather than the theoretical data used in the SRI. In particular, site-specific soil total organic carbon (TOC) data should be used to calculate retardation coefficients rather than applying theoretical or literature data.

9. Conceptual Model for the Study Area (SRI Section 6.0) – The conceptual model of the groundwater plume described in the SRI focuses on describing current downgradient plume conditions. Relatively little discussion is focused on the effect of the existing cap on the VOC plume source term. Equally important, a discussion of likely future groundwater plume trends and factors that might affect the plume behavior in the future is also lacking.

   It should be noted that the original 1993 Feasibility Study (FS) for the Southington Site anticipated that installation of the landfill cap would significantly reduce VOC contaminants of concern in groundwater by significantly reducing leaching of these contaminants from the unsaturated zone waste materials into the underlying groundwater (Note FS pages 3-7, 4-21 and elsewhere). To date, the overall LTMP results indicate that the landfill cap has had relatively little impact on the VOC contaminant concentrations in the downgradient groundwater plume. At a number of downgradient well locations, contaminant levels are quite similar to the levels measured over 10 years ago during the original RI. In addition, highly water soluble ketones continue to be observed in certain downgradient well locations, strongly suggesting that some leaching from the unsaturated zone VOC waste mass continues to occur. It should be noted that an in-depth evaluation of current and future behavior of the VOC source term within the landfill was not conducted as part of the SRI.

   Based upon the available LTMP data, it appears that the groundwater VOC plume will continue to be released from the Old Southington Landfill for a prolonged period of time, perhaps decades. Over this time frame some gradual decline in downgradient VOC concentrations may occur. However, based upon the LTMP data trends, it is also quite

possible that additional "pulses" of contamination that equal (or exceed) current contaminant levels may become embedded in the plume from time to time.

Finally, it should be recognized that over time, downgradient plume behavior might change. For example, in assessing plume behavior, the SRI attributed downward migration of the VOC plume exiting the landfill to extensive surface water infiltration occurring across the Chuck and Eddy's Property. However, in the future, infiltration on Chuck and Eddy's Property could be significantly reduced due to land development, paving, etc. If this were to happen, then the downward migration of the shallow plume could be retarded. This, in turn, might result in an expansion of the shallow VOC plume.

The "conceptual model" of future plume behavior needs to carefully consider these factors, which should also be evaluated in developing an appropriate long term monitoring program for the Site.

Clarification of Certain Technical Points in the SRI

1. Section 2.1.13 page 2-10 – Fall 2005 Field Investigation – There were four phases of microwells, not three during this major and extensive shallow aquifer VOC investigation. The approach to this phased investigation should have been better explained as to how decisions were made and what the main objectives were.

2. Section 2.1.13 page 2-10 – Fall 2005 Field Investigation – The text/tables should contain a clear summary of the exceedances of CT RSR criteria for vapor intrusion that were found rather than being relegated to a table.

3. Section 2.3 page 2-17 – Groundwater Sampling – In the last two paragraphs, the word "method" with should be prefaced by "EPA" in order to designate that these are EPA methods.

4. Section 3.3.2.1 page 3-6 – It is unclear what a depth averaged map accomplishes? The specific areas are probably better served by specific elevation maps for areal views and cross-sections for vertical views.

5. Section 3.3.2.1 page 3-7 – TCE-Related Slug – As previously noted, the fall 2005 field investigations need to be better incorporated into the report. These data appear to have been ignored for most of the SRI discussion. They show continued migration of VOCs from the northern part of the landfill. It is not a single slug that was disturbed by the cap but a chronic emitting source. These results drive other discussions, including the groundwater flow in Section 6.2.

6. Section 3.3.2.1 page 3-8 – G314 Area – The contour map developed from these data indicates flow from the northern portion of the landfill to this area. The low level VOCs found in the 314A area clearly indicate that the northern portion did not receive just wood brush and stumps. The December contours south of SDW-3 are highly speculative and should not even be dashed, particularly if they represent an extreme water level event associated with Black Pond.

7. Section 3.3.2.2 page 3-9 – Vertical Gradients – The concept of the plume running deep appears valid except for the shallow VOCs found in the northern area as verified in the fall 2005 shallow probing program. Note that Figure 10 in the next section shows upward gradients from middle to deep aquifer there.

8. Section 3.3.3 page 3-10 – Surface Water / Groundwater Interaction – The SRI should note the proximity of the GA area immediately southwest of well GZ14 and that groundwater in the site area was reclassified to GB relatively recently.

9. Section 4.1 page 4-1 – Groundwater – Groundwater containing VOC is also emanating from the northern part of the landfill as evidenced by contamination near G314.

10. Section 4.1.1.1 page 4-5 – Vinyl Chloride at G314 – VC was detected during the shallow probing program south of G314A at levels ranging from trace to 100 ug/L.

11. Section 4.1.4.1 page 4-11 – Natural Attenuation Parameters – The fluctuation in VOCs and no visible crossing over of the daughter products suggests that there is no MNA going on, despite what how "favorable" the indicators may be. To suggest that the fluctuations in chemistry are related to variability in low-flow sampling is unrealistic. Fluctuations between ND and 5 ug/L are believable as sampling variability. Fluctuations in the tens and hundreds are an entirely different story.

12. Section 5.1.4.1 and .2 – Kd in Literature – The PSDs have TOC values from section 2.2.2 (page 2-14). Therefore, it should be possible (and preferable) to calculate site-specific retardation coefficients based on site data rather than depend on literature/reference values.

13. Figure 8 – Natural Attenuation – The significance of these figures shows that instead of having degradation of existing TCE and seeing relative increases in daughter products with diminishing PCE and TCE, the LTMP data demonstrate a "roller coaster" of TCE equivalents. Without the crossover of the daughter product concentration curves, the data indicate that new VOC mass is coming into the groundwater system from the landfill, thereby raising and lowering the total VOCs in the system. The parallel responses of the curves mirror the mass influx.